CLAIMS

1. Method for producing steel products (1) with optimum surface quality, especially with ultralow carbon contents (ULC or IF steel), nitrogen contents, total oxygen contents, high-strength and/or stainless steel grades, in each case by melting (2), treatment in a ladle metallurgy installation (3), continuous casting (4) in slab format (5), rolling (6), cooling (7), and usually coiling (8) of the rolled product, characterized by the fact that molten steel (1b) is produced in a process route (10; 11; 12; 13) which is based on an electric arc furnace (2b) and which is selected according to the desired final microstructure; by the fact that the molten steel (1b) from the selected process route (10; 11; 12; 13) is then cast into a thin slab (5a) in the continuous casting mold (14); by the fact that the thin slab (5a) is descaled, partially deformed, cut to partial lengths (15), generally descaled (28), heated to rolling temperature and homogenized in a soaking furnace (16), generally descaled again, and rolled in a finishing mill (6a); by the fact that the rolled product (1a) is coiled in a first coiling station (20) immediately downstream of the last finishing stand (19) or, alternatively, downstream of a cooling line (21); by the fact that the final microstructure (9)

is adjusted in a cooling line (21) according to the desired grade of steel by cooling on a runout table (22); and that the rolled product (1a) is generally finish-coiled in a second coiling station (23).

2. Method in accordance with Claim 1, characterized by the fact that successive treatment steps (24) are carried out as a first process route (10)

• in an electric arc furnace (2b) and

• in a ladle metallurgy installation (3)

-- with at least one vacuum degassing system (27) followed by a ladle furnace (25) for decarbonization, reduction, and addition of alloying materials (26), and

-- with a ladle furnace (25) for slag formation, for slag work, for temperature control, for final adjustment of the final analysis, and for purity rinsing to Δ <Al> contents.

3. Method in accordance with Claim 1, characterized by the fact that successive treatment steps (24) are carried out as a second process route (11)

• in an electric arc furnace (2b) or an electric arc furnace installation (35) and

• in a ladle metallurgy installation (3)

-- with a ladle furnace (25) for slag formation

⇒ for the heating

⇒ and for the prereduction (FeMnHC) of the steel

-- with a vacuum degassing system (27)

⇒ for the decarbonization and denitrogenation

⇒ for the reduction of the slag on the steel surface

⇒ for the desulfurization under reduced pressure,

⇒ for the final adjustment of the final analysis and

⇒ for the purity rinsing to Δ <Al> under atmospheric pressure.

4. Method in accordance with Claim 1, characterized by the fact that successive treatment steps (24) are carried out as a third process route (12)

• in an electric arc furnace (2b) or in an electric arc furnace installation (35) and

• in a ladle metallurgy installation (3)

-- with a ladle furnace (25)

⇒ for temperature control and

⇒ for prereduction (FeMnHC)

-- with at least one differential-pressure degassing process (43) for the decarbonization, desulfurization and denitrogenation, reduction, and addition of alloying materials from an iron alloy, and with final adjustment of the final analysis and

⇒ for the purity rinsing to <Al> contents < 15 ppm bound aluminum (Al_2O_3).

5. Method in accordance with Claim 1, characterized by the fact that successive treatment steps (24) are carried out as a fourth process route (13)

• in an electric arc furnace (2b) or in an electric arc furnace installation (35) and

• in a ladle metallurgy installation (3) with a ladle furnace (25) for temperature control and a subsequent partial-quantity degassing (27a) for decarbonization and denitrogenation, desulfurization, with a ladle degassing (27) for the final adjustment of the final analysis and for purity rinsing to Δ <Al> contents.

6. Method in accordance with Claim 1, characterized by the fact that a descaling (28) is carried out directly below the continuous casting mold (14).

7. Method in accordance with Claim 1, characterized by the fact that a controlled high-temperature oxidation (29) by a controlled atmosphere is carried out in the soaking furnace (16).

8. Method in accordance with Claim 1 or Claim 7, characterized by the fact that the partial strand lengths (15) are inductively heated downstream of the soaking furnace (16).

9. Method in accordance with Claim 1, characterized by the fact that the partial strand lengths (15) are subjected to controlled cooling upstream of the first finishing stand (17) of the finishing mill (6a).

10. Method in accordance with Claim 1, characterized by the fact that continuous product (1c) coiled in the second coiling station (23) is subjected to controlled cooling.

11. Method in accordance with any of Claims 1 to 5, characterized by the fact that the electric arc furnace installation (35) comprises two furnace vessels (30), which are alternately operated with a swiveled electrode system (31) and an oppositely swiveled top injection lance (32), are operated with pig iron, direct reduced charge materials, and scrap, and are operated partially with electric power and/or chemical energy.

12. Method in accordance with any of Claims 1 to 11, characterized by the fact that steels with multiphase microstructure (dual-phase steel 33 or TRIP steel 34) are produced.

13. Installation for producing steel products (1) with optimum surface quality, especially with ultralow carbon contents (ULC or IF steel), nitrogen contents, total oxygen contents, high-strength and/or stainless steel grades, using at least a melting installation (2a), a ladle metallurgy installation (3), a continuous casting machine (4a) for slab strands (5), a rolling mill, a runout table (22), and a coiling station (23), characterized by the fact that the melting installation (2a) consists of an electric arc furnace installation (35) with a ladle metallurgy installation (3) that is downstream with respect to the material flow (36); by the fact that the continuous casting machine (4a) is provided with a continuous casting mold (14) in thin-slab format (5a); and by the fact that at least one descaling system (28a), a shear (38), a soaking furnace (16), a finishing mill (6a), and at least one rollout table (22) with a cooling line (21) upstream or downstream of a coiling station (20; 23) are provided in the material flow (36).

14. Installation in accordance with Claim 13, characterized by the fact that a descaling system (28a) is provided in the continuous casting machine (4a) directly below the continuous casting mold (14).

15. Installation in accordance with Claim 13, characterized by the fact that, in addition to a descaling system (28a) downstream of the continuous casting mold (14) and a descaling system (28a) downstream of the shear (38), an additional descaling system (28a) is provided upstream of the first rolling stand (17) of the finishing mill (6a).

16. Installation in accordance with Claim 13, characterized by the fact that a liquid core reduction line (40) or a soft reduction line (41) is arranged upstream of the shear (38) in the containment roll stand (39) of the continuous casting machine (4a).

17. Installation in accordance with Claim 13, characterized by the fact that the continuous casting mold (14) is designed as a continuous casting mold with a pouring gate.

18. Installation in accordance with Claim 13, characterized by the fact that an inductive heating installation (42) is provided in the material flow (36) between the soaking furnace (16) and the first rolling stand (17) of the finishing

mill (6a) or the descaling system (28a).

19. Installation in accordance with any of Claims 13 to 15, characterized by the fact that the cooling line (21) comprises a laminar cooling line (21a) combined with several intensive cooling boxes (21b).